AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended)   A method comprising:

determining, by a computing device, a configuration of a system of resources;

determining, by the computing device, processing requirements of an application running on the system of resources utilizing an application characterization database;

analyzing, by the computing device, the determined configuration and requirements in order to attempt to optimize the performance of the application;

generating, by the computing device, optimization suggestions from the analysis; and

dynamically causing, by the computing device, applying of the optimization suggestions;

wherein the application characterization database includes:

a static application characterization database storing information regarding fixed characteristics of the application; and

a dynamic application characterization database storing information regarding mutable characteristics of the application, wherein the ~~dynamic~~ static application characterization database is included with the dynamic application characterization database. ~~empty at initialization of the application characterization database and is gradually established as the application is executed.~~

2. (Previously Presented) The method of claim 1, wherein dynamically causing applying of the optimization suggestions includes:

dynamically causing, by the computing device, allocating of resources to the execution of and interaction with the application; and

dynamically causing, by the computing device, utilizing of acceleration tools.

3. (Previously Presented)   The method of claim 2, wherein dynamically causing utilizing acceleration tools includes causing utilizing tools selected from a group including:

- 2 -

primitive performance libraries;

managed runtime optimization settings; and

reordering portions of application execution.

4. (Previously Presented) The method of claim 1, wherein the determining a configuration of a system of resources includes utilizing a device and environment characterization database.

5. (Original) The method of claim 4, wherein the device database includes information regarding the types of resources in the system of resources and information regarding the physical capabilities of these resources.

6. (Original) The method of claim 5, wherein the environment database includes information regarding the configuration, substantially current status, and substantially current capacity of the resources within the system of resources.

7. (Original) The method of claim 6, wherein device and environment characterization database is incrementally generated as each of the resources of the system of resources is powered-on.

8. (Previously Presented) The method of claim 4, wherein the device and environment characterization database is dynamically generated utilizing a service including:

collecting, by the computing device, data from sensors coupled with the resources;

analyzing, by the computing device, the data collected;

inferring, by the computing device, an execution context characterization;

estimating, by the computing device, the capacity of each resource; and

updating, by the computing device, the device and environment characterization database.

9.-10. (Cancelled)

11. (Previously Presented) The method of claim 1, wherein generation of the static application characterization database comprising:

determining, by the computing device at the application's compile time, the data types utilized by the application;

determining, by the computing device at the application's compile time, the frequency of the usage of the data types;

determining, by the computing device at the application's compile time, the resource required by the application; and

updating, by the computing device, the static application characterization database with the determined information.

12. (Previously Presented) The method of claim 11, wherein generation of the dynamic application characterization database comprising:

reading, by the computing device, the static application characterization database;

collecting, by the computing device, runtime application data usage:

analyzing, by the computing device, application usage and identifying resource usage bottlenecks;

updating, by the computing device, the dynamic application characterization database.

13. (Previously Presented)   The method of claim 1, further including:

predicting, by the computing device, application performance after causing applying the suggested optimizations;

monitoring, by the computing device, the actual application performance to generate empirical data;

comparing, by the computing device, the actual application performance to the predicted performance;

utilizing, by the computing device, the empirical data during the analyzing the determined configuration and requirements in order to attempt to optimize the performance of the application.

14.-29. (Cancelled)

30. (Currently Amended)   A system comprising:

a system of resources configured to execute and interact with an application;

a processor;

a Dynamic Application Optimizer, operated by the processor, and configured to attempt to dynamically optimize the performance of the application;

a Device & Environment Database providing information to the Dynamic Application Optimizer about the system of resources; and

an Application Characterization Database providing information to the Dynamic Application Optimizer about the distributed application, wherein the Application Characterization Database includes:

a static application characterization database storing information regarding fixed characteristics of the application; and

a dynamic application characterization database storing information regarding mutable characteristics of the application, wherein the ~~dynamic~~ static application characterization database is included with the dynamic application characterization database. ~~empty at initialization of the application characterization database and is gradually established as the application is executed.~~

31. (Previously Presented) The system of claim 30, wherein the Dynamic Application Optimizer is configured to:

determine a configuration of a system of resources utilizing the Device & Environment Database;

determine processing requirements of an application running on the system of resources utilizing the Application Characterization Database;

analyze the determined configuration and requirements in order to attempt to optimize the performance of the application;

generate optimization suggestions from the analysis; and

dynamically causing applying of the optimization suggestions.

32. (Previously Presented) The system of claim 31, wherein the Dynamic Application Optimizer is further configured to:

> predict application performance after applying the suggested optimizations;
>
> monitor the actual application performance to generate empirical data;
>
> compare the actual application performance to the predicted performance; and
>
> utilize the empirical data to attempt improve application performance.

33. (Previously Presented) The system of claim 32, wherein the Dynamic Application Optimizer is configured to cause applying the optimization suggestions by:

> dynamically causing allocating portions of the system of resources to the execution of and interaction with the application; and
>
> dynamically causing utilizing acceleration tools;
>
> wherein the acceleration tools are selected from a group including:
>
>> primitive performance libraries:
>>
>> managed runtime optimization settings; and
>>
>> reordering portions of the application execution.

34. (Original) The system of claim 32, wherein the Device & Environment Database includes:

> a device portion having information regarding the types of resources in the system of resources and information regarding the physical capabilities of these resources; and
>
> an environment portion having information regarding the configuration, substantially current status, and substantially current capacity of the resources within the system of resources.

35. (Previously Presented) The system of claim 32, wherein the Device & Environment Database is generated by:

> collecting data from sensors coupled with the resources;
>
> analyzing the data collected;
>
> inferring an execution context characterization;
>
> estimating the capacity of each resource; and

updating the device and environment characterization database.

36. (Cancelled)

37. (Previously Presented) The system of claim 35, wherein the static application characterization database is generated by:

determining, at the application's compile time, the data types utilized by the application;

determining, at the application's compile time, the frequency of the usage of the data types;

determining, at the application's compile time, the resource required by the application; and

updating the static application characterization database with the determined information.

38. (Previously Presented) The system of claim 37, wherein the dynamic application characterization database is generated by:

reading the static application characterization database;

collecting runtime application data usage:

analyzing application usage and identifying resource usage bottlenecks;

updating the dynamic application characterization database.

39. (Original) The system of claim 37, wherein the system of resources includes a plurality of hardware architectures; and

the application is a distributed application.

40. (Original) The system of claim 39, wherein the system of resources includes the Dynamic Application Optimizer.

41. (Currently Amended)   An article comprising:

a computer readable storage media; and

a plurality of instructions stored on the computer readable storage media and, configured to enable a machine to perform:

determining a configuration of a system of resources;

determining processing requirements of an application running on the system of resources utilizing an application characterization database;

analyzing the determined configuration and requirements in order to attempt to optimize the performance of the application;

generating optimization suggestions from the analysis; and

dynamically causing applying of the optimization suggestions;

wherein the application characterization database includes:

a static application characterization database storing information regarding fixed characteristics of the application; and

a dynamic application characterization database storing information regarding mutable characteristics of the application, wherein the ~~dynamic~~ static application characterization database is included with the dynamic application characterization database. ~~empty at initialization of the application characterization database and is gradually established as the application is executed.~~

42.(Previously Presented)   The article of claim 41, wherein the dynamically causing applying the optimization suggestions includes:

dynamically causing allocating of resources to the execution of and interaction with the application; and

dynamically causing utilizing of acceleration tools.

43.(Previously Presented)   The article of claim 42, wherein the dynamically causing utilizing of acceleration tools utilizing tools selected from a group including:

primitive performance libraries;

managed runtime optimization settings; and

reordering portions of application execution.

44. (Previously Presented)   The article of claim 41, wherein the determining a configuration of a system of resources includes utilizing a device and environment characterization database.

45. (Original) The article of claim 44, wherein the device database includes information regarding the types of resources in the system of resources and information regarding the physical capabilities of these resources.

46. (Original) The article of claim 45, wherein the environment database includes information regarding the configuration, substantially current status, and substantially current capacity of the resources within the system of resources.

47. (Previously Presented) The article of claim 46, wherein the instructions are further configured to enable the machine to perform incrementally generating the device and environment characterization database as each of the resources of the system of resources is powered-on.

48. (Previously Presented) The article of claim 44, wherein the instructions are further configured to enable the machine to perform dynamically generating the device and environment characterization database utilizing a service including instructions providing for:
> collecting data from sensors coupled with the resources;
> analyzing the data collected;
> inferring an execution context characterization;
> estimating the capacity of each resource; and
> updating the device and environment characterization database.

49.-50. (Cancelled)

51. (Previously Presented) The article of claim 41, wherein the instructions are further configured to enable the machine to perform generating the static application characterization database by:

determining, at the application's compile time, the data types utilized by the application;

determining, at the application's compile time, the frequency of the usage of the data types;

determining, at the application's compile time, the resource required by the application; and

updating the static application characterization database with the determined information.

52. (Previously Presented) The article of claim 51, wherein the instructions are further configured to enable the machine to perform generating the dynamic application characterization database by:

reading the static application characterization database;

collecting runtime application data usage:

analyzing application usage and identifying resource usage bottlenecks;

updating the dynamic application characterization database.

53. (Previously Presented) The article of claim 41, the instructions are further configured to enable the machine to perform:

predicting application performance after applying the suggested optimizations;

monitoring the actual application performance to generate empirical data;

comparing the actual application performance to the predicted performance;

utilizing the empirical data during the analyzing the determined configuration and requirements in order to attempt to optimize the performance of the application.

54. - 67. (Cancelled)